

## ABSTRACT OF THE DISCLOSURE

A response time constant of an A/F ratio control system is calculated in accordance with an engine operating condition. A control gain is calculated based on the response time constant. A degradation index of a response of an A/F sensor is calculated, so as to be used as a parameter representing a model error or aging degree of the A/F control system. The control gain is corrected with a correction coefficient corresponding to the model error. An A/F feedback correcting amount is calculated using the response time constant, the control gain and a deviation between a detected A/F and a target A/F, so as to decrease the deviation. Thus, the A/F control system is prevented from a degradation caused by aging.